



Use of Laparoscopic Hysterectomy in the Treatment of Benign and Malignant Gynecological Disease

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Abstract

The history of laparoscopic surgery in gynaecological diseases progressed with the advances of Semm, as well as with the development of tools, equipment, and energy that led to its development in all surgical areas, including oncology. Hysterectomy is now the most frequently performed gynaecological surgery in the United States, with 555,000 operations, while in the United Kingdom 100,000 procedures are carried out per year and only 9.9% were laparoscopic, and 1.5% were radical laparoscopic surgery due to malign disease. Several studies has been the laparoscopic hysterectomy is the best procedure in the treatment benignant and malignant gynaecological disease because is feasible and safe, with shorter hospital stays and a prompt recovery to daily activities.

Keywords: Laparoscopic hysterectomy; Hospital stays; Hysterectomy; Gynaecological disease

Introduction

The human need to diagnose diseases more exactly led to the introduction of invasive means of examining abdominal organs. The exploration of the inside of our organism commenced with the introduction of the cystoscope by Nitze in the Viennese Royal and Imperial Society of Medicine in 1879. This instrument was improved in 1886 by Leiter, who fitted it with a small Edison incandescent lamp [1]. The development of abdominal laparoscopy was started by Kelling, in Dresden, who used the cystoscope described by Nitze. He inserted it through a hole opened in the abdominal wall of a dog to inspect the content of the intestines. He termed this technique of exploration “celioscopy” and presented the results in the Congress of the German Medical and Biological Society in Hamburg, in September 1901 [2]. Ott, a gynaecologist in San Petersburg, described “ventroscopy”, in which he viewed the inside of the cavity using a canula with a frontal light source. In 1910, Jacobus [3] in Stockholm used the cystoscope in humans, inserting it into the abdomen through a trocar after distending the cavity using water or air. He explored the inside of the cavity and termed this method “laparoscopy”, and he also used this technique in the thorax. In 1911 Berheim, of the United States, published a paper entitled: “Organoscopy: cystoscopy of the abdominal cavity [4]. In 1916 Goetze developed a puncture needle to improve the insufflations of air; in 1920 Orndorff perfected the point and made it pyramidal to facilitate penetration; Stone developed a valvular device in the trocar to prevent gas from escaping. In 1929 Kalk invented 135° oblique optical vision; in 1934 Zollikofer used carbon dioxide instead of air for abdominal insufflation, thereby reducing the risk of a gas embolism and peritoneal irritation [5]. In 1938 the Hungarian Veress, an internal medicine specialist in Vienna, designed and a traumatic needle for the creation of pneumothorax. This has an external sheath with a beveled point and a blunt internal probe which emerges at the moment of penetration into the abdominal cavity, thereby avoiding damage to the internal organs. Due to this it was immediately adopted for the creation of pneumoperitoneum [6]. Semm, a gynaecologist and engineer in Kiev, described the automatic insufflator, and in 1966 he started to perform carefully planned surgical procedures. He also designed a large number of instruments for cutting, coagulation, ligating and suturing to make this surgery possible, so that he is considered to be the father of laparoscopy. From this moment on laparoscopy fully entered the field of Gynaecology [6]. The history of hysterectomy goes back to the 5th century BC, as there are references then to this procedure. In the 2nd century AD at the time of Hippocrates Soranus of Ephesia was said to have amputated a uterus through the vagina. In 1517 in Italy, Berengario da Carpi performed a vaginal hysterectomy, and the first information on attempted hysterectomies date from 1825. It was in 1846 that Bellinger performed the first elective abdominal hysterectomy. Once by 1900 the mortality rate was lower than 1%, hysterectomy started to become an option for the treatment of gynaecological

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diseases and symptoms. This broke the historical taboo imposed by Johnson, the Director of the London Medical Chirurgical Review, who had stated in 1825: “we consider the extirpation of the uterus not associated with previous protrusion or inversion to represent one of the cruellest and most impractical operations conceived or executed by man [7]. It is not our intention to discourage audacious and new surgical procedures, but there is a limit which it would be imprudent to surpass”. This surgical technique has undergone extremely rapid development. In 1984, Semm performed the first vaginal assisted laparoscopic hysterectomy. The first completely laparoscopic hysterectomy was performed in Pennsylvania in January by Sutton et al. [8] and the corresponding description was published in 1989. Later, the same doctor Semm, who was German, published the results of a supracervical technique known as “classical abdominal Semm hysterectomy”. Oncological surgery was rejected by some doctors at first, due to the risk of disseminating tumor cells and the need to shred the tumor so that it could be extracted. Nevertheless, this paradigm changed when in 1991 Coptcoal presented a radical nephrectomy due to carcinoma in the III Minimum Invasion Congress, Boston [9]. Then in 1993 Ono et al. [10] presented 2 cases of nephrectomy due to renal carcinoma renal without destroying the kidney, which was extracted through a small incision.

Current Panorama

Hysterectomy is now the most frequently performed gynaecological surgery in the United States, with 555,000 operations, while in the United Kingdom 100,000 procedures are carried out per year [11]. In the United States in 1997 63% of hysterectomies were open and only 9.9% were laparoscopic, and 1.5% were radical laparoscopic surgery due to malign disease; in 2001 the corresponding figures were 41% and 32%, respectively [12]. Radical laparoscopic hysterectomy is currently the most common surgical procedure. It has rates of intraoperative complications such as bleeding and lesions to the bladder or urethra which are similar to those of open surgery. However, it has advantages including less postsurgical pain, a shorter recovery time [13] and a lower rate of blood transfusions. Nevertheless, the duration of the operation has been reported to be longer [14]. Respecting pathological results, the retrospective analysis by Taylor showed no differences in terms of the number of ganglia and positive surgical borders. Park et al. [15] in a retrospective analysis of 99 patients in clinical stages IA1 and IA2, found similar oncological results and intraoperative complications. Spirtos et al. [16] evaluated 78 patients. Another author with Lee et al. [17] evaluated 24 patients in clinical stages IA2 and IBI; in both studies type III total laparoscopic radical abdominal hysterectomy was performed, with pelvic and para-aortic lymphadenectomy and an oncological follow-up of from 3 to 5 years, with similar results to those of open surgery. On the other hand, Yan et al. [18] in a 12-year follow-up showed that survival depends, as it does after open surgery, on the biology of the tumour and not the procedure used. The extension of radicality (parametrium, vaginal border) is not compromised according to the study by Ghezzi et al. [19] which specifically covered complications of the urinary ducts such as lesions to the bladder or urethra. Nor was there a statistical difference between the laparoscopic vs. the open groups in terms of acute retention [20]. Even Choi et al. [21] in Korea carried out a study that compared totally laparoscopic radical abdominal hysterectomy with vaginally assisted radical laparoscopic hysterectomy and found similar results, although recovery was faster and with less bleeding for the totally laparoscopic procedure. The above point shows that the said procedure is a safe and viable option to perform [22,23]. On

the other hand, one study determined that 40 cases are required for a learning curve, while to reduce the duration of surgery 57 cases are required. This curve shortens if a basic training programme is applied [24], starting with benign procedures and with the experience of having performed open procedures beforehand, although the latter point is more debatable [25]. The percentage of conversion to an open procedure from laparoscopy in an analysis of 260 consecutive patients, independently of their Body Mass Index (BMI), age, previous surgery, size of uterus and tumour was 1.5% [26,27]. In the Hospital Regional de Alta Especialidad, Oaxaca, México an analysis was performed on a total of 44 cases, distributed into: type III radical hysterectomy for invasive cervical cancer, hysterectomy type I cervical cancer *in situ*, extrafascial hysterectomy for benign disease, routine endometrium, ovary and routine salpingo-oophorectomy. The variables included age, BMI, surgical time, bleeding, intraoperative and postoperative complications, conversion, hospital stay, and pathology report. In this study it was obtained that the laparoscopic treatment demonstrated superiority to the open treatment.

Lines of Future Treatment

Although at present the management of benign and malignant pelvic disease of the hysterectomy of simple hysterectomy, radical and pelvic lymphadenectomy is feasible, safe, with shorter hospital stay and recovery sooner to its normal activities than open surgery [27], the Challenge is to increase the number of dissected nodes and decrease surgical times.

Also with the advent of robotic surgery, a possible future line represents performing robotic procedures with complete oncological results as well as implementing the use of hybrid (robotic/laparoscopic) procedures that offer a lower percentage of complications, shorter surgical time and oncological results appropriate. A very important aspect is the training not only of third level physicians to perform this type of procedure, but also of offering training to second level physicians to offer laparoscopic hysterectomies to those patients who have benign pathologies, which have already been demonstrated Superiority compared to open procedures.

Conclusion

The emergence of laparoscopic procedures revolutionized modern surgery, and the exception was not hysterectomy, which, when initially proven in benign pathology, demonstrated frank superiority over the open procedure. As for malignant pathology, the paradigms and myths about tumor sowing, lymph node harvesting and survival have been cleared, demonstrating that laparoscopic hysterectomy is safe in tumor pathology (cervical cancer, ovarian cancer and endometrium) and has shown similar results in (Mean of 2 days), postoperative pain, transoperative bleeding, and restarting of precocious daily activities.

References

- Spaner SJ, Warnock GL. A brief history of endoscopy, laparoscopy, and laparoscopic surgery. *J Laparoendosc Adv Surg Tech A*. 2009;7(6):369-73.
- Vecchio R, MacFayden BV, Palazzo F. History of laparoscopic surgery. *Panminerva Med*. 2000;42(1):87-90.
- Jacobaeus HC. Über die Möglichkeit, die Zystoskopie bei Untersuchung seröser Hohlräume anzuwenden. *Munich Med Wschr*. 1910;57:2090-2.
- Bernheim BM. IV. Organoscopy: Cystoscopy of the Abdominal Cavity. *Ann Surg*. 1911;53(6):764-7.
- Gomella LG, Strup SE. History of laparoscopy: urology's perspective. *J*

- Endourol. 1993;7(1):1-5.
6. Seem K. Endoscopic intraabdominal surgery. Kiel: ChristianAlbrechts-University. 1984;68.
 7. Sutton C. Hysterectomy: a historical perspective. *Baillieres Clin Obstet Gynaecol.* 1997;11(1):1-22.
 8. Sutton C. Past, present, and future of hysterectomy. *J Minim Invasive Gynecol.* 2010;17(4):421-35.
 9. Coptcoat MJ, Rassweiler JJ. The future of laparoscopic surgery in urology. *Urologe A.* 1996;35:226-32.
 10. Ono Y, Sahasahi M, Yamada S, Oshima S. Laparoscopic nephrectomy without morcellation for renal cell carcinoma: report initial, 2 cases. *J Urol.* 1993;150(4):1222-4.
 11. Bachmann GA. Hysterectomy. A critical review. *J Reprod Med.* 1990;35(9):839-62.
 12. Cox S, Kuo C, Jamieson DJ, Kourtis AP, McPheeters ML, Meikle SF, et al. Poisoning hospitalisations among reproductive-aged women in the USA, 1998-2006. *Inj Prev.* 2011;17(5):332-7.
 13. Taylor SM, Romero AA, Kammerer-Doak DN, Qualls C, Rogers RG. Abdominal hysterectomy for the enlarged myomatous uterus compared with vaginal hysterectomy with morcellation. *J Obstet Gynecol.* 2003;189(6):1579-82.
 14. Garry R, Fountain J, Mason S, Hawe J, Napp V, Abbott J, et al. The Evaluate Study: Two parallel randomised trials, one comparing laparoscopic with abdominal hysterectomy, the other comparing laparoscopic with vaginal hysterectomy. *BMJ Brit Med J.* 2004;328:494.
 15. Park JY, Kim DY, Kim JH, Kim YM, Kim YT, Nam JH. Laparoscopic versus open radical hysterectomy for elderly patients with early-stage cervical cancer. *Am J Obstet Gynecol.* 2012;207(3):195.
 16. Spirtos NM, Eisenkop SM, Schlaerth JB, Ballon SC. Laparoscopic radical hysterectomy (type III) with aortic and pelvic lymphadenectomy in patients with stage I cervical cancer: surgical morbidity and intermediate follow-up. *Am J Obstet Gynecol.* 2002;187(2):340-8.
 17. Lee EJ, Kang H, Kim DH. A comparative study of laparoscopic radical hysterectomy with radical abdominal hysterectomy for early-stage cervical cancer: a long-term follow-up study. *Eur J Obstet Gynecol Reprod Biol.* 2011;156(1):83-6.
 18. Yan X, Li G, Shang H, Wang G, Han Y, Lin T, et al. Twelveyear experience with laparoscopic radical hysterectomy and pelvic lymphadenectomy in cervical cancer. *Gynecol Oncol.* 2011;120(3):362-7.
 19. Ghezzi F, Cromi A, Ciravolo G, Volpi E, Uccella S, Rampinelli F, et al. Surgicopathologic outcome of laparoscopic versus open radical hysterectomy. *Gynecol Oncol.* 2007;106(3):502-6.
 20. Uccella S, Laterza R, Ciravolo G, Volpi E, Franchi M, Zefiro F, et al. A comparison of urinary complications following total laparoscopic radical hysterectomy and laparoscopic pelvic lymphadenectomy to open abdominal surgery. *Gynecol Oncol.* 2007;107(1):S147-9.
 21. Choi CH, Lee JW, Lee YY, Kim HJ, Song T, Kim MK, et al. Comparison of laparoscopic-assisted radical vaginal hysterectomy and laparoscopic radical hysterectomy in the treatment of cervical cancer. *Gynecol Oncol.* 2012;19(1):3839-48.
 22. Khavanin N, Mlodinow A, Milad MP, Bilimoria KY, Kim JY. Comparison of perioperative outcomes in outpatient and inpatient laparoscopic hysterectomy. *J Minim Invasive Gynecol.* 2013;20(5):604-10.
 23. Cohen SL, Vitonis AF, Einarsson JI. Updated hysterectomy surveillance and factors associated with minimally invasive hysterectomy. *JSL.* 2014;18(3):e2014.00096.
 24. Garry R, Fountain J, Brown J, Manca A, Mason S, Sculpher M, et al. Evaluate hysterectomy trial: a multicentre randomised trial comparing abdominal, vaginal and laparoscopic methods of hysterectomy. *Health Technol Assess.* 2004;8(26):1-154.
 25. Hwang JH, Yoo HJ, Joo J, Kim S, Lim MC, Song YJ, et al. Learning curve analysis of laparoscopic radical hysterectomy and lymph node dissection in early cervical cancer. *Eur J Obstet Gynecol Reprod Biol.* 2012;163(2):219-23.
 26. Vásquez-Ciriaco S, Isla-Ortiz D, Palomeque-Lopez A, Garcia-Espinoza JA, Jarquin-Arremilla A, Lechuga-Garcia NA. Initial experience in the laparoscopic treatment of benign and malignant gynaecological diseases in the Hospital Regional de Alta Especialidad in Oaxaca. *Cir Cir.* 2017;85(1):12-20.
 27. Xiao M, Zhang Z. Total laparoscopic versus laparotomic radicalhysterectomy and lymphadenectomy in cervical cancer. *Medi-cine (Baltimore).* 2015;94(30):e1264.